

What is claimed is:

1. A display apparatus comprising:

a substrate;

a transparent electrode;

5 a liquid crystal layer located between the substrate and the transparent electrode, the liquid crystal layer having a reflective region, a transmissive region, and an interface region located between the reflective region and the transmissive region;

a thin film transistor that is electrically coupled to the transparent electrode through an electrical coupling in the interface region.

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2. The apparatus of claim 1 further comprising a reflective electrode positioned in the reflective region and the interface region, wherein the reflective electrode is electrically coupled to the thin film transistor in the interface region.

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3. The apparatus of claim 2 further comprising an organic layer positioned between the reflective electrode and the thin film transistor such that the organic layer forms a sidewall in the interface region, wherein the reflective electrode covers the sidewall and the organic layer.

4. The apparatus of claim 3, wherein the transparent electrode covers the transmissive
20 region, the sidewall, and the organic layer.

5. The apparatus of claim 4, wherein the transparent electrode is located between the reflective electrode and the thin film transistor.

6. The apparatus of claim 3, wherein the organic layer has a patterned surface and the reflective electrode is conformally coated on the patterned surface.

7. The apparatus of claim 3, wherein the transparent electrode is in the reflective region,
5 the transmissive region, and the interface region, and wherein the transparent electrode in the reflective region is covered by the organic layer.

8. The apparatus of claim 2, wherein the reflective electrode comprises at least one of a silver layer, a silver alloy layer, a molybdenum-tungsten alloy layer, and an aluminum-
10 neodymium layer.

9. The apparatus of claim 1, wherein the thin film transistor comprises a gate electrode, a source electrode, and a drain electrode, wherein the gate electrode is located in the reflective region and one of the source electrode and the drain electrode extends from the reflective region
15 to the interface region to form an interface electrode that forms the electrical coupling with the transparent electrode.

10. The apparatus of claim 9, wherein the interface electrode is shaped and positioned to prevent light leakage in the interface region.

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11. The apparatus of claim 9, wherein the interface electrode extends across the interface region.

12. The apparatus of claim 9, further comprising a signal line that forms a border with the reflective region, the transmissive region, and the interface region, wherein the interface electrode is located at the border.

13. The apparatus of claim 9, wherein the shape and position of the interface electrode
5 are adjusted according to a rubbing direction for the apparatus.

14. The apparatus of claim 1, wherein the reflective region and the transmissive region are located in a pixel region of the apparatus that is defined by signal lines.

10 15. The apparatus of claim 1 further comprising a color filter coupled to one of the substrate and the transparent electrode for filtering light of a predetermined wavelength range.

16. The apparatus of claim 1, wherein the reflective region has a first cell gap and the transmissive region has a second cell gap, and wherein the second cell gap is approximately
15 twice as large as the first cell gap.

17. A display apparatus comprising:

a first member including a first substrate;

a second member including:

20 a second substrate having a reflective region for reflecting light and a transmissive region for transmitting light;

a thin film transistor formed in the reflective region of the second substrate;

a transparent electrode deposited on the second substrate;

an organic layer deposited on the second substrate, the organic layer having a first
25 thickness in the reflective region and a second thickness in the transmissive region, wherein a

sidewall having a height that is approximately equal to a difference between the first thickness and the second thickness forms in an interface region between the reflective region and the transmissive region, and wherein the thin film transistor is electrically coupled to the transparent electrode in the interface region; and

5 a liquid crystal layer located between the first member and the second member.

18. The apparatus of claim 17, wherein the thin film transistor comprises a gate electrode, a source electrode, and a drain electrode, wherein the gate electrode is located in the first region and one of the source electrode and the drain electrode extends from the first region to the
10 interface region to form an interface electrode that is coupled to the transparent electrode.

19. The apparatus of claim 18, wherein the interface electrode is shaped and positioned to reduce light leakage in the interface region.

15 20. The apparatus of claim 19, wherein a shape and a position of the interface electrode is determined by a rubbing direction of the apparatus.

21. The apparatus of claim 17 further comprising a reflective electrode deposited on the organic layer in the reflective region.

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22. An array substrate for a display device, comprising:
a substrate having a reflective region, a transmissive region, and an interface region between the reflective region and the transmissive region;
a thin film transistor formed in the reflective region;

an organic layer formed in the reflective region over the thin film transistor, the organic layer forming a sidewall in the interface region; and

a transparent electrode deposited over the thin film transistor, coupled to the thin film transistor in the interface region.

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23. The array substrate of claim 22, wherein the transparent electrode covers the organic layer in the reflective region.

24. The array substrate of claim 23 further comprising a reflective electrode deposited on
10 the organic layer in the reflective region, the reflective region being electrically coupled to the transparent electrode.

25. The array substrate of claim 22, wherein the organic layer covers the transparent electrode.

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26. A method of making a display apparatus, the method comprising:

providing a substrate having a reflective region, a transmissive region, and an interface region between the reflective region and the transmissive region, wherein a thin film transistor is located in the reflective region;

20 forming an organic layer in the reflective region on the thin film transistor, such that the organic layer forms a sidewall in the interface region; and

depositing a transparent electrode on the thin film transistor such that the transparent electrode is coupled to the thin film transistor in the interface region.

27. The method of claim 26 further comprising depositing a reflective electrode on the organic layer in the reflective region.

5 28. The method of claim 27, wherein the transparent electrode is deposited on the organic layer.

29. The method of claim 26, wherein the organic layer is deposited on the transparent electrode in the reflective region.

10 30. The method of claim 25 further comprising forming an interface electrode in the interface region for electrically coupling the thin film transistor to the transparent electrode, wherein the interface electrode is positioned to prevent light leakage.

15 31. The method of claim 30 further comprising adjusting a shape and position of the interface electrode according to a rubbing direction of the display apparatus.

32. The method of claim 30, wherein the interface electrode is formed by a separate process from the thin film transistor.

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